Poudre School District issued a challenge: Take the best performing school in the district, and beat it. Make it a place that students and teachers want to spend their days, with more daylighting and low toxicity paints and materials. Add air conditioning, but don't increase the utility bills. Use recycled and recyclable products. Make the building itself serve as a learning laboratory. Use landscaping that saves water. Make sure it's easy and uncomplicated to maintain. Oh, and one more thing, build it for no added cost!

"The traditional design approach sets minimum requirements, but doesn't push design teams to come up with the best achievable design," said Mike Spearnak, the district's Director of Planning, Design and Construction. "We encouraged designers to create a school that would set a new standard in learning environments, yet fit within a typical school budget."

Challenging Designers: Zach and Bacon Elementary

Focus on the Classroom

"Kids spend most of their time in the classroom, so we focused the creative energy and analysis on the classroom design first and worked our way out," said Spearnak.

"Our goal was to make every classroom terrific with good daylighting and views, minimal glare, windows that can be opened, good ventilation and year-round comfort." Energy and daylighting modeling helped optimize the classroom design.

Students in Diane Odbert's Explorer LAB class lead tours of Bacon Elementary.

The slope of the ceiling, window type and placement, and more all impact visual comfort in the classrooms.

Does High Performance Cost More?

Overall, no. Initial design fees were higher, but construction costs were lower. Construction costs for Zach Elementary came in under budget at $100 per square foot.

The district paid more for the design (10% instead of the usual 7% to 8%). "We wanted our design team to spend extra time to optimize the design, and that costs more," said Spearnak. "The district's added design expense will continue to reap benefits in lower utility bills, and as future schools are built using this design."

"We can't afford not to build schools like these."

- Mike Spearnak

Rebuild COLORADO

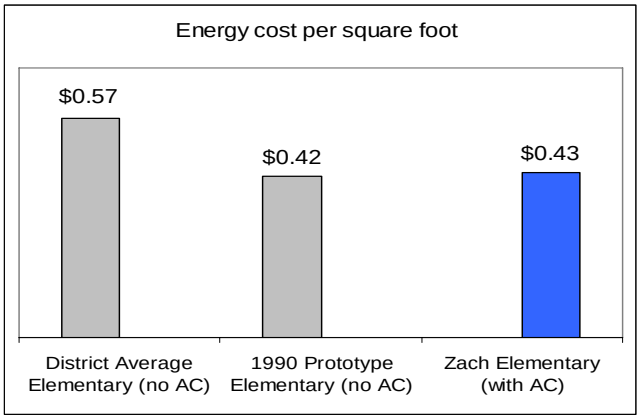
Buildings that teach

At Bacon Elementary, students in Diane Odbert's **Explorers LAB** class learned about the school's energy saving and environmental features and then led tours for their peers and the community, pointing to a glass cut-out to show what's in the walls, describing how the chiller saves money by making ice at night, showing recycled materials, and describing the water-saving landscaping.

"In other schools, the inner workings are hidden. Bacon Elementary presents learning opportunities at every turn," said Odbert.

Low utility bills ...even with air conditioning

"With the focus on student performance, the district chose to include air conditioning in the new school design," said Stu Reeve, Energy Manager for the district. "Yet even with cooling, Zach Elementary's annual gas and electricity bills are nearly the same as recently built elementary schools and much lower than our average elementary."



"Efficient use of water is increasingly important in Colorado. Water usage at Zach Elementary is way below that of other schools, with water bills just one-third that of the 1990 prototype schools."

"The new design focuses on the students," said Reeve, "yet the design will save the district thousands of dollars in lower water and energy bills every year for the life of the schools."

PROJECT DETAILS

Facility: Poudre School District: Zach Elementary (opened Fall 2002), Bacon Elementary (Fall 2003)

Facility Size: 525 student capacity grades K-6 (426 students in 2002), 63,000 square feet (sf) total

Facility Location: Fort Collins, Colorado

Project Cost: $6.3 million or $100 per sf (bid May 2001 including alternates).

Energy Cost (FY03): $27,358 in gas and electricity costs, $0.43 per sf (compare to $0.42 for 1990 prototype or $0.57 average for all elementary schools, all without AC)

Energy Use (FY03): Electricity 306,000 kWh, Gas 2,208 therms, total 50 kBtu per sf per year

Energy Savings (FY03): Compared to district average elementary per sf costs, $8,800 savings in gas and electricity costs.

Water Use (FY03): 417,834 gallons, or 980 gallons per student

Water Cost (FY03): $1430, or about one-third of 1990 prototype school water cost

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